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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,440	08/27/2001	Jae-Ryung Lee	EF 321682639US	3995

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EXAMINER
UHLIR, NIKOLAS J

ART UNIT	PAPER NUMBER
1773	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/914,440	LEE ET AL.	
	Examiner	Art Unit	
	Nikolas J. Uhlir	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This office action is in response to the amendment/request for reconsideration filed 11/08/02. Upon careful consideration of the both the applicant's arguments and the applied prior art, the rejection dated 6/04/02 is hereby withdrawn. Applicant's arguments directed towards the fact that the applied prior art was directed towards a two-layer system as opposed to a single layer system were found to be persuasive. A non-final action on the merits follows.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: In the instant case, the applicant in several claims requires a "water soluble" phenoxy. There is no support for a "water soluble" phenoxy resin in the specification. Applicants are directed to the 1st paragraph on page 14 of the instant specification, which describes a phenoxy resin that is "dispersed" in water. A "water dispersed" phenoxy resin is not the same as a "water soluble phenoxy resin." Thus, the specification provides no support for the terminology in claims 2-4 and 9.

Claim Objections

3. Claim 9 is objected to because of the following informalities: In the instant claim 9, applicant recites the term "melanine." This term is misspelled and should read "melamine." Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. The term "main" in claims 1-9 is a relative term which renders the claim indefinite. The term "main" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In the instant case, it is unclear to the examiner what the scope the term "main" encompasses. How much resin is required for the resin to be considered the "main component?" Does "main" mean >50%, >all of the other components individually, or >then all of the other components combined? Clarification is required.

6. Further, claims 1 and 5, utilize the phrase "selected from." This is improper markush group terminology, and renders the scope of the claim unclear. Replacement of "selected from" with "selected from the group consisting of" is sufficient to overcome this rejection.

7. Claims 4, 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case, the applicant requires an "average particle size" of flake type particles. As asserted in the prior office action, it is unclear how this "average particle size" is measured, as flake type particles, unless they are perfectly square, possess a major a minor dimension. What dimension is "average particle size" referring to? Clarification is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata et al. (WO98/45114) in view of Suzuki et al. (US5330850), further in view of Pfeil et al. (US5612394).

10. For the purpose of this examination, the examiner has relied upon US Patent #6235407 as an English equivalent to WO98/45114. All references refer to the US patent.

11. Regarding the limitations of claim 1, wherein the applicant requires a resin solution for preparing a resin-coated steel sheet for a fuel tank of an automobile comprising: a main resin solution selected from the group consisting of epoxy resin, urethane resin, and phenoxy resin; melamine resin; colloidal silica; PTFE based wax; and a plate type metallic powder selected from Al, Zn, Mn, Co, Ni, Sn, and SnO.

12. The limitation(s) "for a fuel tank of an automobile" in claims 1-9 is an intended use limitation and does not appear to be further limiting in so far as the structure of the product is concerned. "[I]n apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference

as compared to the prior art." *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02.

13. With respect to the limitations of claim 1, Ogata et al. teaches a steel sheet for an automobile fuel tank, wherein the steel sheet has been coated with an organic resin film that contains a metal powder (column, lines 30-45). This organic resin film comprises amine modified epoxy resins, including phenoxy resins (column 8, lines 38-50). It is the examiner position that the phenoxy resin of Ogata et al. is equivalent to applicants claimed "main" resin. The metal powder incorporated into the organic resin layer is in particulate or flake form, and is made of Ni, Al, Fe, or Cu (column 7, lines 1-5 and 18-20).

14. Therefore it would have been obvious to one of ordinary skill in the art to utilize flake type Ni or Al as the metal powder in Ogata et al., as they are taught to be equivalent to the other materials listed as suitable for this purpose.

15. Thus, when flake shape Ni or Al is utilized, the particle limitations of claim 1 are met.

16. Applicants are respectfully reminded that, substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In Re Fount* 213 USPQ 532 (CCPA 1982); *In Re Siebentritt* 152 USPQ 618 (CCPA 1967); *Grover Tank & Mfg. Co. Inc V. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

17. Further regarding the limitations of claim 1, Ogata et al. teaches that the organic resin layer that contains a metal pigment may contain an additive such as a lubricant

(column 10, lines 10-14). Further, Ogata et al. teaches that a suitable lubricant for a resins containing hydroxy or amine functionality is polytetrafluoroethylene wax (column 12, lines 48-55).

18. Therefore it would have been obvious to one with ordinary skill in the art to add polytetrafluoroethylene wax to the metal particulate containing organic resin layer taught by Ogata et al.

19. One would have been motivated to make such a modification so as to improve the lubricity of the metal particulate containing resin layer. One would have been motivated to specifically select polytetrafluoroethylene based wax due to the fact that Ogata et al. teaches that this wax is suitable for improving the lubricity of resins containing hydroxy or amine functional groups, and the fact that the metal particle containing organic resin layer of Ogata is an amine modified epoxy of phenoxy, and thus possesses one or both of these functionalities.

20. The examiner acknowledges that the PTFE wax lubricant taught by Ogata is added to a different layer than the metal particulate containing organic resin layer. However, as Ogata clearly teaches that the metal particulate containing layer can contain a lubricant, and teaches that PTFE wax is a suitable lubricant for the same types of resins that make up the metal particulate containing layer, there is motivation to utilize PTFE wax in the metal particulate layer of Ogata et al.

21. However, Ogata et al. fails to teach including a melamine resin into the metal particulate containing organic resin, and fails to teach including colloidal silica into the metal particulate containing organic resin layer.

22. However, with respect to the requirement of colloidal silica, Suzuki et al. teaches that adding colloidal silica to an organic resin such as a phenoxy improves the corrosion resistance of the resin (column 9, lines 55-65).

23. Therefore it would have been obvious to one with ordinary skill in the art to add colloidal silica as taught by Suzuki et al. to the metal particulate containing resin layer of Ogata et al.

24. One would have been motivated to make such a modification due to the teaching in Ogata et al. that the metal particulate containing resin could contain a filler, and the fact that Suzuki et al. teaches that adding colloidal silica to a phenoxy resin (similar to that of Ogata et al.) improves the corrosion resistance of the resin.

25. Regarding the requirement of a melamine resin, It is noted that Ogata et al. teaches that amine modified epoxies/phenoxies are suitable resins for the metal particle containing organic resin layer (column 8, lines 50-67 of Ogata et al.). Further, it is noted that Suzuki et al. teaches that epoxies/phenoxies are preferably crosslinked in order to improve their corrosion resistance, and lists amines as suitable crosslinking agents (column 9, lines 45-55 of Suzuki et al.). However, neither Ogata et al. nor Suzuki et al. explicitly teach the use of melamine resin for this purpose, as required by claim 1.

26. However, Pfeil et al. teaches that epoxy resins that are cured with a curing agent such as melamine are possess both chemical resistance and flexibility (column 1, lines 40-50).

27. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize melamine resin as the curing agent for the metal particulate containing organic resin of Ogata et al. as modified by Suzuki et al.

28. One would have been motivated to make this modification due to the fact that both Ogata et al. teach that amines are suitable for crosslinking the epoxies/phenoxy utilized in their respective inventions, and the fact that Pfeil et al. teaches that curing an epoxy with a melamine results in a film that is chemically resistant and flexible. Further, one would have been motivated to specifically select melamine as the curing agent as it is taught to be equivalent to the other curing agents listed as suitable.

29. Regarding the limitations of claim 5, wherein the applicant requires method for making a resin coated steel sheet for a fuel tank, wherein the method comprises the steps of: coating a resins solution comprising a main resin solution of phenoxy resin having a number average molecular weight of 25,000-50,000; 2 to 15 phr (parts per hundred) of melamine resin on the basis of the main solution; 10-20 phr colloidal silica on the basis of the main solution; 2-10 phr of PTFE based wax on the basis of the main solution; and 5-70 phr of at least one plate type metallic powder selected from Al, Zn, Mn, Sn, and SnO; and baking and drying the resin at 140-250^{0}C.

30. Regarding the actual method limitations of claim 3 (coating a resin solution and heating it at a specified temperature) Ogata et al. teaches that the metal particle containing organic compound is coated on the surface of the steel sheet and then dried by baking at temperatures below 200^0 C. As 200^0 C is completely encompassed in the range specified by the applicant in claim 3, this limitation is met.

31. Regarding the further limitations to the coating solution, Ogata et al. teaches that the molecular weight of the amine-modified phenoxy/epoxy has an effect on the resultant properties of the film. If the molecular weight of the amine-modified phenoxy/epoxy is too low, the film exhibits poor toughness, whereas if the molecular weight is too high, the affinity between the metal powder and the resin is insufficient (column 9, lines 41-54). Thus, the examiner takes the position that the molecular weight of the amine modified epoxy/phenoxy resin is a results effective variable, and it would have been obvious to one with ordinary skill in the art at the time the invention was made to change the molecular weight of the phenoxy to achieve a desired balance between toughness of the film and affinity for the metal powder.

32. Further, with respect to the amount of lubricant required by claim 3, Ogata et al. teaches that the amount of lubricant that is suitable for addition to a resin that has a hydroxy or amine functionality is preferably 5-30 parts by weight based on 100 parts of the resin (column 12, lines 49-60).

33. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to use 5-30 parts by weight of PTFE based wax as the lubricant in Ogata et al.

34. Oe would have been motivated to make this modification due to the teaching in Ogata et al. that PTFE wax was a suitable lubricant for resins including a hydroxy or amine functionality, and that 5-30 parts by weight of this resin is preferably added to the resin to improve its lubricity.

35. Regarding the amount and particle size of the metal powder required by claim 3, Ogata et al. teaches that 30-110 parts by weight metal powder are added based on 100 parts by weight of the resin. As 30 parts by weight is encompassed by the applicants range, this limitation is met (column 7, lines 19-65).

36. Regarding the melamine resin requirement, it is noted that Ogata et al. teaches that the amount of amine used to modify the phenoxy resin affects the resultant properties of the film. If the amount of amine added is too small, the resin will not have affinity for the metal powder, whereas if the amount of amine is too large, the corrosion resistance of the film will decrease as the excess amine will absorb water (column 9, lines 1-26 of Ogata et al.). Thus, the amount of melamine added to the resin of Ogata et al. as modified by Suzuki et al. and Pfeil et al. is a results effective variable.

37. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the amount of melamine resin added to the resin of Ogata et al. as modified by Suzuki et al. and Pfeil et al. in order to attain a desired balance between resin modification and corrosion resistance.

38. Regarding the amount of colloidal silica added to the resin. Suzuki et al. teaches that 1-40 parts by weight colloidal silica can be added to a phenoxy resin in order to increase the corrosion resistance of the resin (column 9, lines 30-45). Further, Suzuki et al. teaches that if too much colloidal silica is added to the resin, the spot weldability of the resin to steel decreases (column 9, lines 55-66). Thus, the amount of colloidal silica in the resin film of Ogata et al. as modified by Suzuki et al. and Pfeil et al. is a results effective variable.

39. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the amount of colloidal silica added to the phenoxy resin in order to attain a desired balance between weldability of the resin and corrosion resistance.

40. Regarding the limitations of claim 6, wherein the applicant requires the resin coating to have a dry thickness between 1-10μm. Ogata et al. teaches that the metal particulate containing organic layer is formed to a thickness between 2-10μm (column 10, lines 1-3). As 2μm is completely contained within the applicants range, this limitation is met.

41. Regarding the limitations of claim 7, wherein the applicant requires the PTFE wax lubricant to have a particle size between 0.1-3μm. Ogata et al. teaches that the lubricant has a particle size in the range of 1-7μ (column 11, lines 40-45). As 1μm is completely encompassed in the applicants range, this limitation is met.

42. Regarding the limitations of claim 8, wherein the applicant requires the metal particles to have a particle size in the range of 0.5-5μ. Ogata et al. teaches flake type Al that has average minor dimensions meeting applicants claim requirements (column 7, lines 35-45). The examiner takes the position that the average minor dimension of the flake type particles of Ogata et al. is equivalent to applicants claimed average particle size.

Double Patenting

43. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

44. Claims 1-9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15, 25, and 31 of U.S. Patent No. 6387538 (Lee et al.) in view of Ogata et al.

45. In the instant case, claims 15, 25, and 31 of Lee et al. teach all of the limitations of claims 1-9, except for the requirement of a 2-10 phr of PTFE based lubricant having a particle size in the range of 0.1-3μm.

46. However, Ogata et al. teaches that adding PTFE based wax havin a particle size in the range of 1-7μm to a phenoxy resin improves the lubricity of the resin (column 11, lines 1-55 and column 14, lines 36-42). For this purpose, Ogata et al. teaches that 5-30 phr of the wax per the weight of the resin is suitable (column 12, lines 49-60).

47. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to add 5-30 parts by weight of a PTFE based wax having a particle size in the range of 1-7μm as taught by Ogata et al. to the phenoxy resin coating solution of Lee et al.

48. One would have been motivated to make this modification due to the teaching in Ogata et al. that adding 5-30 phr PTFE based wax having a particle size between 1-7μ

to resins that are similar or identical to those utilized by Lee et al. improves the lubricity of the resin layer. Further, one would have been motivated to make this modification as both the Ogata et al. patent and the Lee et al. patent are directed towards the same invention, that being a resin coated steel sheet for an automobile fuel tank.

49. Regarding the limitation in claims 2-4 and 9, wherein the applicant requires the phenoxy resin to be water soluble. The examiner fully recognizes that in a double patenting rejection, the content of the specification of the conflicting patent should not be considered when applying the rejection, and that the rejection should be based only on the scope and breadth of the claims. Thus, the examiner has intentionally avoided reading into the specification of Lee et al. in order to establish this rejection. However, it has been established that the specification can always be used as a dictionary to learn the meaning of a term in a patent claim. In re Boylan, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent. In re Vogel, 422 F.2d 438, 441-42, 164 USPQ 619, 622 (CCPA 1970).

50. Thus, in light of this case law, the examiner searched the specification of Lee et al. to clarify the scope of the phrase, "phenoxy resin solution," which is present in all of the claims in Lee et al. that are relevant to the instant double patenting rejection. It is particularly noted that in all of the examples of Lee et al., a phenoxy resin solution which is entitled "PKHW-35" is used, which is a phenoxy having a molecular weight of 50,000 and is in a "water diffusion" (see examples on columns 16-26, in particular column 18,

lines 15-20). Thus, the examiner takes the position that when Lee et al. says "phenoxy resin solution" in the claims, he is referring to a phenoxy resin that is water soluble.

Response to Arguments

51. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Examiners Note

52. The applicant should note that the Ogata et al. references (both English and Japanese) and the Pfeil et al. references accompanied the prior office action, and so have not been included herein.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

nju
January 14, 2003

STEVAN A. RESAN
PRIMARY EXAMINER